

# CANDIDATE HANDBOOK FOR CERTIFIED GEOTHERMAL DESIGNERS

**(CGD®)**

*PRESENTED BY  
ASSOCIATION OF ENERGY ENGINEERS*

*SPONSORED BY  
THE INTERNATIONAL GROUND SOURCE  
HEAT PUMP ASSOCIATION*

## Information for Applicants

### 1. OBJECTIVES

To raise the professional standards of those engaged in commercial geothermal heat pump design.

To improve the practice of commercial geothermal heat pump design by encouraging design professionals in a continuing education program of professional development.

To identify persons with acceptable knowledge of the principles and practices of commercial geothermal heat pump design related disciplines and laws governing and affecting geothermal heat pump design through completing an examination and fulfilling prescribed standards of performance and conduct.

To award special recognition to those professionals who have demonstrated a high level of competence and ethical fitness for commercial geothermal heat pump design.

### 2. ELIGIBILITY

Professionals with the following prerequisite may apply:

- A 4-year mechanical engineering graduate, R.A., or CEM with three years of verified experience in commercial geothermal heat pump system project design.

**OR**

- Any other four year technical or non-technical degree with five years of verified experience in commercial geothermal heat pump system project design.

**OR**

- A two-year technical degree with eight years of verified experience in commercial geothermal heat pump system project design.

**OR**

- Ten years or more of verified experience in commercial geothermal heat pump system project design

- A valid P.E. License with a minimum of 3 geothermal commercial projects

In addition to meeting one of the eligibility requirements mentioned above, the applicant must also submit a minimum of three projects related to the commercial geothermal industry. These projects must be completed; feasibility studies and projects not yet completed will not be accepted. Also, 2 of the 3 projects must be a minimum of 100 tons and the smallest size project accepted is 50 tons.

### 3. THE REQUIRED BODY OF KNOWLEDGE

The effective practice of commercial geothermal heat pump design requires in-depth knowledge of a wide variety of subjects. However, the candidate need only demonstrate to the satisfaction of the certification board the knowledge and ability to apply the essentials of commercial geothermal heat pump design.

### 4. TRAINING

In order to take the CGD exam, the candidate must attend an [International Ground Source Heat Pump Association \(IGSPHA\)](#) sponsored and approved classroom seminar or on-line training.

### 5. PROCEDURES

The first step in the CGD application process is to register for the training through IGSPHA. Certification applications can be obtained the AEE website. Certification is based on education and/or commercial geothermal work experience, commercial project experience, and passing the examination.

- Should applicants have doubts about their experience prerequisite for certification, he/she can have his/her application reviewed by the CGD Board prior to taking the exam.

It is very important that all applicants give clear and complete details concerning commercial geothermal heat pump system project design. The CGD Board must have a clear understanding of the applicant's experience.

Once the application is complete and exam is passed, all applications are sent to the CGD Board. The CGD Board reviews the application and gives final approval for certification status.

### 6. THE APPLICATION

The application provides an organized method for documenting professional and educational background.

The personal data form is divided into the following three parts:

- Education
- Professional Registration
- Experience and Activities

The applicant is requested to list on the application all pertinent information in these categories for evaluation by the CGD Board.

To be awarded the CGD designation, candidates must achieve a pass rate of 70% on the examination. Applicants that do not receive certification status can request that their applications be resubmitted to the CGD Board, if his/her education or experience level changes.

**It is essential that candidates devote considerable time and effort to completing the application since certification by the CGD Board can be based only on the information provided. Inaccurate and/or incomplete data will only be detrimental for the applicant.**

#### **CGD in Training (CGDIT):**

Any candidate who does not meet the experience requirements can complete the **CGD in training application** and take the CGD exam. The individuals who pass the exam will be awarded the **CGD in Training**. When the candidate meets the full CGD eligibility requirements, they then submit the CGD Application with all completed supporting documentation to the certification director to be considered by the board for certification.

The CGD in Training Certificate is valid for a period of three years and not eligible for certification renewal. Candidates that wish to upgrade their CGDIT to CGD will not be required to pay an additional fee or complete the exam again assuming the CGDIT certification is current.

The CGD Certification Board may vote any CGD candidate as CGDIT if they feel the candidate did not provide adequate employment or project summary information. These candidates may provide the missing details and have his/her file re-evaluated for CGD certification.

## 7. THE CGD EXAMINATION

The examination will be administered by AEE through [Remote Proctoring](#).

The applicant must complete the written exam. The examination questions are based on concepts and experiences basic to commercial geothermal heat pump design, on recognized tests, and on supplemental reading. **The Exam is Open Book!**

An examination administrator will proctor the examination. All questions on the written examination are mandatory. The questions will be multiple choice and true/false. Grading is accomplished electronically.

The written CGD Examination deals with such subject as:

1. Codes and Standards
2. Engineering Economic Analysis and Financing
3. Computer Software for Design Analysis
4. Diagnostics and Troubleshooting
5. Installation and Grout/Considerations
6. Product Design and Application
7. Environmental Impact
8. Piping Systems
9. Loop Systems
10. Soil Conductivity

## 8. MAINTAINING CERTIFICATION

The continued education of professionals is essential to enable them to cope with rapidly changing conditions. Therefore, to remain certified as a, GeoExchange Designer Professional, you must accumulate ten professional credits every three years and submit a completed recertification form to the Certification Director. Each CGD reaches recertification date on the fourth January 1<sup>st</sup> following the date appearing on the certificate attesting to certification. Professional credits for recertification can be accumulated any time from the date receiving certification to the December immediately proceeding recertification date. Example: professionals certified by examination and receiving a certification in 2020, file a record of ten professional points with the Certification Director by December 31, 2022.

### Activities for CGD Credits

Continued employment in a combined geothermal heat pump design, heating, ventilation and air-conditioning:

**3 credit** for 3 years

Membership in a professional engineering society:

**1 credit per year up to 3 credits**

Continuing education/professional activities in geothermal heat pump design, heating, ventilation and air-conditioning:

**2 credits**

Per CEU, college credits hour

or 10 contract hours for seminars

## 9. RETIRED CERTIFICATION

A CGD upon retiring and reaching the age of sixty-five is designated as “retired”. No further reporting is necessary except to notify the certification director of meeting the age requirement by sending a copy of driver’s license.

## 10. SUSPENSION OR REVOCATION OF CERTIFICATION

Professionals that do not accumulate the required professional credits, certification shall terminate, unless in the judgement of the certification board, extenuating circumstances exist and the deficiency can be readily overcome.

Certification may be revoked for failure to abide by the [AEE Code of Ethics](#). The professional is offered a hearing by the certification board and notified of the views of the complainant and of the hearing date and location. This notice shall be given in writing at least thirty days in advance of the hearing.

## 11. REINSTATEMENT OF CGD

Professionals who do not acquire sufficient CGD maintenance points to be recertified on recertification date will be notified in writing of suspension from using the CGD designation and will no longer be listed as a CGD in any AEE publication until such time that the professional:

- Resubmits to the certification process and successfully meets the criteria for certification by personal data information and examination or,
- Acquires make-up points at a cumulative total, equal to 3.5 per year for every year since original date of certification. This option is only available one time. Certifications that have lapsed more than three renewal cycles must retake and pass the CGD exam to reinstate.

## 12. FEES

### **Application Fees**

The exam fee of \$400 is payable to AEE which is due at the time the application is submitted.

### **Retesting Fees**

A fee of \$200 is payable to AEE for each retest of the CGD exam.

### **Renewal Fee**

- For each three-year renewal, the fee will be \$300.00. The renewal fees are payable to AEE.
- Reinstatement fee will be \$350.00. The reinstatement fees are payable to AEE.
- No refunds allowed

## 13. USE OF CGD DESIGNATION

A Certified GeoExchange Designer Professional (CGD) may use the designation with name on organization letterheads, business cards, and all forms of address. Certification is for individuals only. The CGD designation may not be used to imply that an organization or firm is certified.